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"Profile of CP in admitted children in Paediatric Neuroscience Department: A study of Dhaka Shishu (Children) Hospital, Dhaka, Bangladesh"

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Abstract:
Aim: *The aim of this study was to work out the demographical and clinical options of patient's with brain disorder cp aiming to our patients or patients clinics.* ***Materials and Methods:*** *Children admitted to capital of Bangladesh Dhaka Shishu (Children) Hospital of Paediatric Neuroscience Department of medication and Rehabitiontion patients or patients clinics, Dhaka, Bangladesh with the identification of throughout the study among were enclosed with study. Axe, Sex, etiological factors, clinical classifications, and epidemiologic characteristics like socio- economic standing still because the issues associated with CP was analyzed all told patients.* ***Results:*** *The fall of 110 patients with mean 46.25 ± 18.25 months, 50 were Female and 60 were Male. The foremost common etiologic risk factors were hemorrhage and presence of vulnerable miscarriage in prenatal period; physiological condition, low birth weight and immaturity in prenatal amount; and Child convulsions and physiological conditions, Low birth weight and immaturity in parental amount; and child convulsions and hyperbiluribinemia within the postpartum period.* ***Discussion:*** *Consanguineous wedding was gift in 24.6% of families. In clinical classification it had been seen that 45 subjects were spastic handicapped person (34.6%), 41 were spastic dialogic (31.5%), 15 were dyskynetic (11.5%), 14 were spastic handicapped person (10.8%), 10 were mixed sort (7.7%) and 5 were hypotonic and ataxic (3.8%).****Conclusion:*** *Prenatal risk factors constatute the foremost risk factors in CP etiology. CP incidence may be lowered by shut follow of the newborns United Nations agency has been thought of as high risk newborns thanks to the presence of risk factors throughout pregnancies or deliveries, and by increasing the amount of Child medical care units. Besides, it's necessary to lift public awareness concerning blood kinship marriages in our country.*

Keywords: *Cerebral Palsy, Epidemiology, Etiology*

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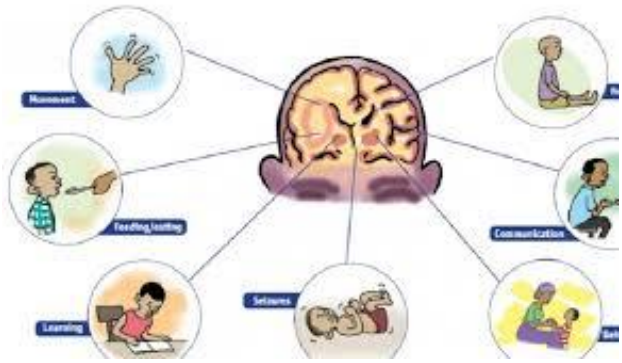
I. Introduction

Cerebral palsy (CP) could be a well-recognized neurodevelopment incapacity Characterized by disorders in movement, tone and posture ensuing from a non-progressive harm to the immature brain tissue. Voluntary motor activity impairments and sensory dysfunctions develop as a consequence [1] [2]. Except From monorail con-troll disorders, visual impairments, hearing impairments, communication issues, feeding issues, Seizures and psychological feature impairments may additionally be ascertained in CP [3]. Although totally different incidence rates are according up to now, CP is one among the foremost common causes of disability in kids with a mean incidence of 2-3 per 1000 live births in several populations [1] [4]. In a very recent study conducted in kids aged between 2-16 years, CP prevalence was according to be 4.4 per 1000 live births in our country [5]. Brain harm resulting in CP might develop either in antepartum, perinatal or postnatal amount. Most typical etiologic factors are immaturity, ischemia, hypoxemia, hyper bilirubinemia and trauma [1] [6]. Since improvements and advances in infant considerably reduced the fatality rate rates in developed countries, CP risk was consequently increased because of the increased survival of risky premature and low birth weight newborns[6] [7].Early diagnosing and treatment of CP are significantly vital in prosperous rehabilitation. The aim of CP re-habitation is to reduce the handicap by increasing the control, purposeful level, intellectual level, social participation and independence of the Children [8] [9].



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Having information regarding epidemiological profile of the sickness incidence of that cannot be underestimated normally population, are useful in terms of each treatment and hindrance. Thus we tend aimed to see the demographical and clinical characteristics of youngsters with CP World Health Organization admitted to our patient or patient clinics in Japanese a part of People's Republic of Bangladesh

II. Background and Literature Review

Human beings have the most elaborate, sophisticated, versatile and creative means of Communication, which is made possible by their more complex neurophysiological mechanisms(Suresh & Swapna, 1997)[29]. Bangladesh is considered to be one of the least develop countries in the world as measured in terms of average income, calories consumed per person, high infant mortality rate and low literacy rate (Khan and Ferdous , 2003)[27]. On the other hand education is one of the most fundamental rights of any person, living in any country in the world. The Constitution of the People's Republic of Bangladesh in article 17 suggests that Bangladesh needs to initiate a need based compulsory free education. "Education for All" has been declared the in1990 and Bangladesh government also made a declaration on "Education for All" and introducedCompulsory Primary Education through constitutional means (Alam, 2006). Inclusive educationis a strategy to improve education systems, by challenging and changing exclusionary policies and practices. Cording to the World Health Organization (WHO) 10% of total population in Bangladesh are disabled (Akhter and Rahman, 2004)[31]. According to Bangladesh bureau of statistics 16.41% children are disabled due to birth injury (Khan and Ferdous, 2003)[27]. A large epidemiological study of children with disabilities aged 2-9 years in Bangladesh indicated a prevalence rate of 6.8% for all grades and types of disabilities and of 1.5% for serious disabilities.An estimated 20% of infants are born prematurely in Bangladesh, and 30% have low birth weight (LEW) with a total population of greater than 146 million people, including 20 million children greater than 5 years of age, large, unrecognized populations may be at risk for neurodevelopment morbidity, particularly considering that 85% of deliveries occur at home, often with no skilled **care**; only 7% of births are ever registered; and primary health care services do not includescreening for the developmentally delayed child (Cerebral palsy and Bangladesh ,2006)[30]. Disability does not just affect an individual, but the whole family and community around the individual. Physical disability includes many non-advancing movement dysfunctions, which have many different causes. At least one child in ten is born with congenital disabilities or acquires physical, mental or sensory impairments due to preventable diseases, accidents and injuries, malnutrition, micronutrient deficiencies and lack of adequate care pre-natal care. In the past five decades, UNICEF and its partners have achieved remarkable gains in primary prevention to reduce death and illness among young children and prevent childhood disability through increased immunization coverage, improved nutrition, reduction of micronutrient deficiencies, and access to clean water and sanitation.

The number of people with disabilities in Bangladesh is increasing and facilities are not enough to meet special attention. Based on an assessment of the available figures and estimates by WHO (2000) and World Bank (2004) for developing countries, an overall disability prevalence is about 10% of the population remains a valid working estimate. The prevalence of disabilities in children below 18 years can be estimated to 6% and for the age group above 18 years the prevalence to about 14% or corresponding to 3.4 million children with disabilities and 10.2 million adults with disabilities. In accordance with the degree of disability, they are identified as mild, moderate and severely handicapped (Ministry of Education, 2004) [28]. There is no comprehensive data is currently available in the country indicating the number, type, or degree of disability amongst the youth population. However, the World Health Organization (WHO) estimates there are about 3.4 million children with some form of disability. A large majority of them have no access to education. The reasons are several first, the 64 residential schools are established by the Ministry of Social Welfare for visually impaired children can accommodate no more than 1,200children. Though some 113 NGOs are engaged in

activities for the disabled organized under theNational Forum of Organizations Working with the Disabled (NFOWD), most of the NGOs have limited programs for hearing-impaired children. Second, virtually all special-needs schools are located in or near urban centers and inaccessible to children from rural areas. Third, there remains a stigma attached to physical disabilities, particularly in the case of intellectual impairment, physical deformity, and uncoordinated movement especially in the case of girls. Level of family income appears not to influence enrolment significantly as disablement is fearedas a cause for social disgrace-often ignored, hidden or denied. Finally, there is a severe shortageof teachers trained in the skills to effectively communicate with disabled children. One recent study under the ESTEEM project of Primary Education Development Project (PEDP-1) has found that about 75% of disabled children are not enrolled in any form of educational program (Ministry of Education, 2004). This study is concentrate with the physically disabled children and the prospects and possibilities of inclusive education in Bangladesh.

III. Materials and Methods

The study comprised a hundred and ten Childrens with the identification of CP aged between 9 - 12 years WHO (World Health Origination) had been underneath follow-up at capital of Bangladesh Dhaka Shishu (Children) Hospital of Paediatric Neuroscience Department of Medicine and Rehabilitation patient or patient clinics, capital of Bangladesh Shishu (Children) Hospital. All folks gave written knowing consents and study was con-ducted in keeping with Declaration of national capital, once getting elaborated medical histories from heir folks, careful system and medical special tyexaminations were performed by constant physiatrist. Age, gender, maternal age and profession, paternal age and profession, detected etiological factors, concomitant issues (including visual impairments, hearing impairments, speech disorders, feeding issues and cognitive impairments) and epidemiologic characteristics of the patients were assessed. Socio demographical characteristics of the patients' and their families, info concerning the identification and later therapies, and detailed histories of prenatal, perinatal, postnatal amount were gathered from face-to-face interviews and from medical records. Presence of deformities, jerkiness and concomitant issues were determined once activity elaborated system and medical specialty examinations. Bone resonance imaging findings were additionally recorded if out there. Etiological classifications were created concerning the antepartum, perinatal, and postnatal risk factors.

Clinical classifications were done in keeping with Hagberg's [10] classification. Patients were groupped into following categories:

1) Spastic quadriparesic CP,
2) Spastic diplegic CP,
3) Spastic hemiplegic CP,
4) Dyskinetic CP,
5) Hypotonic-ataxic CP,
6) Mixvarieties CP.

Data analysis was performed mistreatment "SPSS" applied math software system package. For Windows Chi-square check was used for applied math comparison, applied math significance was set at $p < 0.05$.

IV. Results

A total of a hundred and ten Childrens were enclosed within the study. Mean age was 46.25± 18.25 months (9 – 144 months), 60 were boys (54.5%) and 50 were girls (45.5%) with a boys/girls magnitude relation of 1.2. There was no statistically significant distinction between boys and women in distribution of cases by age teams, most of the cases were at 25 (47.3%) people **(Table 1).** It was seen that 96.9% of the mothers were housewives and most of the fathers were officers or self-employers, academic levels of fathers were considerably over the mothers. Consanguineous marriages were gift in twenty 24.6% (32) of the families, concerning the socioeconomically level, 50% (65) had low, 24.6% (32) had medium and 25.4% (33) had high socio-economic conditions. Regarding the clinical classifications of our patients, most of the cases were spastic quadriplegics with the ratio of 31.8% (35cases), followed by spastic diplegics (28.1%, 31 cases), dyskitenics (10.9%, 12 cases), spastic hemiplegics (9.0%, 10 cases), mix varieties (15.4%,17 cases) and hypotonic,ataxics (4.5%, 5 cases), severally **(Table 2).** Regarding etiological risk factors; threat of miscarriage and channel injury was the foremost common risk factors in antenatal amount (22.7%, n=25); physiological condition (59.1%, n = 65), low birth weight (45.4%, n = 50) and prematurity (45.4%, n=50) in perinatal period; and infant convulsions (20%, n=22) and infant hyperbilirubinemia (18.1%, n= 20) within the postnatal amount. Etiologic factors couldn't be determined in 14 %(n =14) of the cases **(Table 3).** When the distribution of the etiological factors within the clinical classifications were assessed, asphyxia and tough deliveries were most typical in spastic handicapped person CP, immatureness and low birth weight in spastic diplegicCP, and infant hyperbiluribinemia in dyskinetic CP. 72 (65.45%) Childrens weren't ambulant and 38 (34.54%) were ambulating with support or independently, it had been seen that 4 Childrens were exploitation oral baclofen and one was exploitation tizanidine.

Neurosis injections were performed in nine cases and one Child was exploitation oral baclofen additionally to neurosis injection. There was intracheal baclofen pump in one Children28 cases (25.45%) were exploitation medical treatments, most of that were antiepileptic medicine (36 cases).Among concomitant issues, oral-motor dysfunctions (sucking difficulties, swallowing disorders, abduction issues, drooling, dysarthria) were gift in 14 % (n = 42), incontinence 16.66% (n=50), visual issues (strabismus, hemianopia) in 12. 66% (n = 38), dental issues (enamel issues, upset, tooth decays, tooth gum hyperplasia) in 15.33% (n = 46), brain disorder in 11. 66% (n=35), backwardness in 12% (n = 36), involuntary movements in 6.66% (n=20), epithelial duct issues (vomiting, constipation) in 5% (n=15), hearing disorder in 3. 33% (n=10) and respiratory organ issues in 2. 66% (n=8) of the patients **(Figure 1).** Among system issues, foot deformities were detected in 54. 54% (n=60), spinal curvature in10. 9% (n=12), spinal curvature in 16. 36% (n=18), knee deformities in 7. 27% (n=8) and a few alternative issues in 2. 7% (n=3) of the patients **(Figure 2).**

Table1: Demographical characteristics of patients (n=110).

		Number of patients n = 110	Percentage %
Gender	Boys	60	54.5
	Girls	50	45.5
Age (years)	0 - 1	6	5.5
	1 - 2	20	18.1
	2 - 5	52	47.3
	>5	32	29.1

Table2: Cerebral palsy types (n=110).

Type	Number of patients (n)	Percentage (%)
Spastic quadriparesic	35	31.8
Spastic diplegic	31	28.1
Spastic hemiplegic	10	9.0
Dyskinetic	12	10.9
Hypotonic-ataxic	5	4.5
Mix type	17	15.4

Table3: Risk factors (n=110).

Risk factors	Number of patients (n)	Percentage (%)
Prenatal		
- Threat of miscarriage or vaginal bleeding	25	22.7
- Maternal disease	14	12.7
- Multiple gestation	8	7.2
Perinatal		
- Asphyxia	65	49.1
- Low birth weight	50	45.4
- Prematurity	50	45.4
- Difficult delivery	42	38.1
Postnatal		
- Neonatal convulsion	22	20
- Neonatal hyperbilirubinemia	20	18.1
- Neonatal infection	14	14
- Intracraniyal hemorrhage	5	4.5
Undetermined	14	12.7

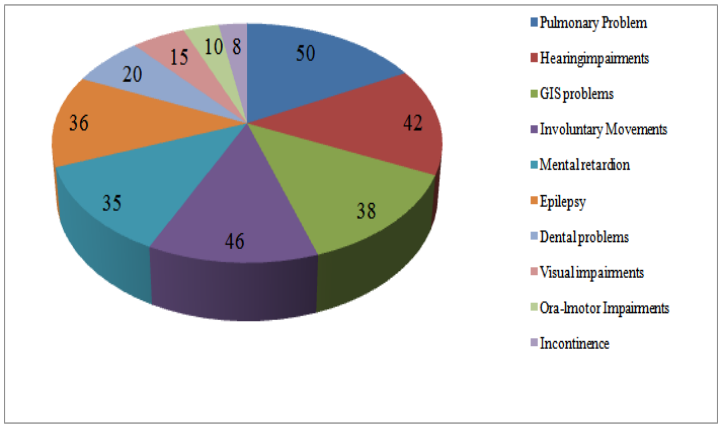

Figure1. Concomitant problems in patients.

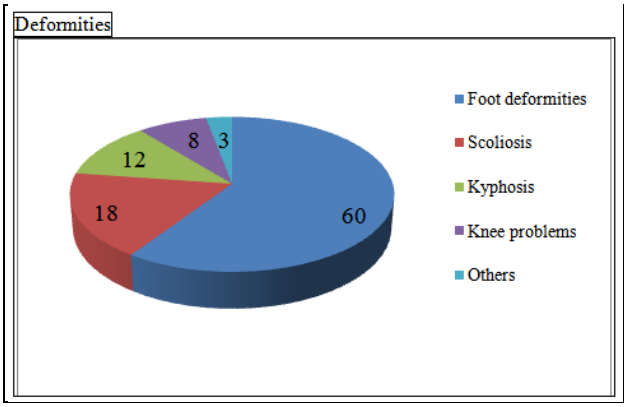

Figure2. Musculoskeletal deformities in patients.

MRI scans were on the 104 patients and 94 of them discovered varied pathologies, whereas remaining 10 were traditional. Periventricular leukomalacia (PVL) was seen in 58 cases, unilateral (focal) infarcts in 8, multiple infarcts in 7 and alternative findings (i.e., cerebral atrophy, hydrocephalia, cerebral hemiatrophy, involvement of bas-al ganglia and thalamus) in 21 cases.

V. Discussion

CP is that the commonest reason for fascicle disabilities of childhood in worldwide which may cause permanent incapacity, thus it's vital to determine diagnosing, to initiate acceptable treatment and rehabilitation programmer and to coach the patient's family as before long as doable [3] Well-recognition of epidemiological characteristics can clearly offer edges not solely in hindrance, however conjointly in treatment of the diseases will have an effect on each genders; but boys area unit affected slightly on top of girls. During this current study, we tend to observed that sixty of our a hundred and ten patients were boys with a boy and girl magnitude relation of 1.2. Similarly, Okan et al. [11] reported a boy and girl magnitude relation of 1.56 in their study that was conjointly conducted in our country in step with these results, Johnson et al. [12] reported boy/girl magnitude relation as 1.33 in Europea and Laisram et al. [13] reported as 1.9 in India though having Children relationships between oldsters isn't directly related to development of CP, it ought to be unbroken in mind that it may be a predisposing risk issue and might enhance the genera risk. Therefore, it's vital to lift the notice of the community regarding consanguineous marriages. In many studies con-ducted on CP patients in our country like Bangladesh, ICDDRB'S. [25] Reported the magnitude relation of consanguineous marriages as 26, Eriman et al. [7] as 25%, and Erkin et al. [15] as 23.8%. Likewise, this magnitude relation was 24.6% in our study. Clinical classification categorizes CP as spastic (quadriparesic, diplegic, hemiplegic), hypotonic,ataxic, dyskineticve mix-type CP [10].The foremost common varieties area unit the spastic varieties in worldwide. Similarly, most of our patients (70.5%) were spastic CP.

However, the distribution of the clinical subtypes of our spastic CP patients differed from the results of western countries. In our study, 36.3% of our cases were spastic quadriparesic and 32.7% were spastic diplegic. Eriman et al. [7] evaluated 202 patients with CP and almost like our results they rumored that 34% was spastic diplegic and 32% was spastic tetraplegic.Whereas, in European countries spastic paralysis is seen in considerably higher rates. Studies rumored the quantitative relation of spastic quadriparesic CP as 18 -20.8%

and spastic diplegic CP as 40.9% - 54.9% in Europen countries [12] [16] [17]. The probable explanations of this finding is also the minimized perinatal mortality of premature babies as a result of a lot of offered and equipped newborn medical aid units in western countries and determined variations in predisposing risk factors intermediate. DyskineticCP quantitative relation was 10.1% in our study. BSMMU [24] rumored this quantitative relation as 14.4% and ICDDRB's. [25] as 13.6% in Asian nation.However, in European countries, it absolutely wasrumored as 6.5% [12]. The upper quantitative relation in our country could part flow from to the shortage of awareness of families relating to hyperbilirubinemia and also the delay to hunt for treatment thanks to misthinking it as physiological jaundice. In distribution of etiological factors it absolutely was seen that perinatal risk factors together with physiological state (59.1%, n = 65), low birth weight (45.4%, n = 50) and immaturity (15.4%, n = 50) were considerably a lot of common during this cur-rent study. In different studies conducted in Bangladesh; icddrb's [15] determined the low-birth weight (44.45%), immaturity (20.2%) and physiological state (50.2%); Ones et al. [20] determined the low birth weight (41.59%), anoxia (41.59%) and immaturity (35.40%), and Demir et al. [21] determined the physiological state (39.2%) and prematurity (25.5%) because the commonest risk factors, it absolutely wasdetermined that the foremost risk factors were the perinatal risk factors in our country, we have a tendency to assume that CP incidence will effectively be down by up the maternity observance and by increasing the standards of delivery rooms, delivery groups and infant medical aid units. When the distribution of etiological factors in clinical classification is assessed, it's exceptional that physiological state and tough deliveries ar a lot of common in spastic quadriparesic CP, immaturity and low birth weight in spas-tic diplejic CP and infanthyperbiluribinemia in dyskinetic CP. Various deformities thanks to jerkiness and muscle imbalance could develop in youngsters with CP. the foremost common of those ar humpback, scoliosis, hip dislocations, knee flexion contractures, pesequinus, pes valgus and pesequinovarus deformities. Eriman et al. [7] detected foot deformities to be the foremost common (45.5%), followed by spinal deformities (13.8%). Similarly, we have a tendency to additionally determine that foot deformities were the foremost common deformity in our patients with a quantitative relation of (54.54%), followed by spinal curvature (16.36%) and humpback (10.9%), respectively. Various concomitant issues like visual impairments, speech disorders and hearing impairments will be seen furthermore as motor impairments in youngsters with CP. Impairments in development and coordination of facial muscles, particularly of perioral muscles, result with deterioration of suction, swallowing and speech articulation. Besides, thanks to lack of coordination within the oral muscles, severe feeding issues and secretion issues could develop [20]. In line with the literature, the foremost common related drawback was oral-motor disorders (in Bastille Day of our patients) whereas impairment was the second (12.66%). it absolutely was found that concomitant problems together with speech disorders, visual issues, brain disorder and retardation were a lot of common in spastic quadriparesic CP, whereas deafness was a lot of common in dyskinetic CP.Pueyo et al. [22] re-evaluated their studies on brain lesions in CP performed by victimization victimization structural and purposefulimaging techniques and created some conclusions. They rumored that in the main periventricular nerve tissue was affected in spastic diplegic CP. They additionally expressed that nerve tract dysplasia furthermore as animal tissue and neural structure lesions were gift in spastic paralysis. Unilateral lesions were found to be a lot of common in handicapped person sorts.DyskineticCP was characterized either with pathologic changes in basal ganglia and thalamus or absence of any lesion. In our study we have a tendency to determine that PVL was gift in 32 of 36 spastic dialogic, infertility of nerve tract in 27 of 34 spastic quadriparesic, unilateral infarcts in 8 of 10 spastic handicapped people, and involvement of basal ganglia and neural structure in VI of eleven dyskineticCP patients. There are some limitations of our study. Major limitation is that the comparatively tiny variety of patients enclosed. Additional studies together with larger variety of patients can offer a lot of precious results. Secondly, we have a tendency to didn't use gross motor perform organization in our patients since purposeful analysis was on the far side the aims of the current study.

VI. Conclusion

To conclude, it had been discovered that prenatal factors were the leading risk factors in CP etiology. We have a tendency to tend to assume that CPincidence can effectively be down by raising the physiological condition observance and by increasing the standards of delivery rooms, delivery teams and babe medical care units. Finally; although CP is not a curable ill health, rehabilitation, education and psycho social support may significantly reduce the problems and can offer reintegration of the child into the community. Therefore, timely designation and initiation of applicable rehabilitation programmers have to be compelled to be ensured.

Abbreviations:

GTCS: Generalized tonic-clonic seizures

NCC: Neurocysticercosis

ADEM: Acute disseminated encephalomyelitis

SDH: Subdural hematoma
SAH: Subarachnoid hemorrhage
ICSOL: Intracranial space occupying lesion
CT: Computed tomography.

Conflict of Interest: There is no conflict of interest.

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